

Section name references in L^AT_EX*

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Documentation overview for hyperref

The documentation for package `hyperref` consists of several files:

Manual The **USER MANUAL** (also available as HTML).

README The **README** file (also available as text file). Here information is collected that is not yet in the manual: new features, package compatibility, limitations, known problems, . . .

ChangeLog This file records the version history (also available as text file).

Options This file provides a short option summary.

Bookmark talk, slides Slides for the talk “PDF information and navigation elements with hyperref, pdfTeX and thumbpdf” at EuroT_EX 1999.

Bookmark talk, paper The paper version of the talk.

Source code documentation:

hyperref.dtx This is the source code documentation for hyperref.

backref.dtx “Back referencing from bibliographical citations”

 **nameref.dtx** “Section name references in L^AT_EX” (this file)

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1 Introduction

Cross-referencing to include the *name* of the section, rather than just the number or page. This works by redefining some of the inside \LaTeX macros, so it is vulnerable to future changes.

2 History

Sebastian Rahtz, for Lou Burnard, March 15th 1994;
 SPQR CERN July 1994;
 Last mod. Sept. 3th MG;
 Sept. 19th SPQR;
 April 11th 1995 SPQR (added section formatting hook);
 April 14th 1995 SPQR (compatibility with hyperref);
 June 22 1995 SPQR (removed typeout from Sectionformat);
 September 22 1997 added varioref hacks by Corey Minyard;
 September 28th changes by David Carlisle.
 More recent changes are recorded in ChangeLog.

3 Implementation

```
1 (*package)
2 \RequirePackage{refcount}[2006/02/12]
```

We redefine `\label` so that it also writes the name of the current section to the `.aux` file; if the name ends in a dot, we zap it. To allow for the `hyperref` package, also write fourth and fifth fields (empty by default; used for cross-ref name, and file).

```
3 \def\strip@period#1.\relax#2\@@@{#1}
```

3.1 `\label` stuff

Here is tested, whether package `showkeys` is loaded. But if option `final` is used, the macros of `showkeys` are not defined, so we have to check an additional test.

```
4 \newif\ifNR@showkeys
5 \NR@showkeysfalse
6 \@ifpackageloaded{showkeys}{%
7   \begingroup
8     \@ifundefined{SK@@label}{%
9       }{%
10        \global\NR@showkeystrue
11      }%
12   \endgroup
13 }{}

14 \def\label#1{%
15   \@bsphack
16   \begingroup
17     \@onelevel@sanitize\@currentlabelname
18     \edef\@currentlabelname{%
19       \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
20     }%
```

```

21   \protected@write\@auxout{}{%
22     \string\newlabel{#1}{%
23       {\@currentlabel}%
24       {\thepage}%
25       {\@currentlabelname}%
26       {\@currentHref}{}%
27     }%
28   }%
29 \endgroup
30 \esphack
31 }%
32 \ifNR@showkeys
33 \def\label#1{%
34   \bsphack
35   \SK@SK@label{#1}%
36   \begingroup
37     \@onelevel@sanitize\@currentlabelname
38     \edef\@currentlabelname{%
39       \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
40     }%
41     \protected@write\@auxout{}{%
42       \string\newlabel{#1}{%
43         {\@currentlabel}%
44         {\thepage}%
45         {\@currentlabelname}%
46         {\@currentHref}{}%
47       }%
48     }%
49   \endgroup
50   \esphack
51 }%
52 \fi

53 \let\ltx@label\label

Needed for the subeqnarray package.

54 \@ifundefined{slabel}{}{%
55   \def\slabel#1{%
56     \bsphack
57     \if@filesw
58       {%
59         \@onelevel@sanitize\@currentlabelname
60         \edef\@currentlabelname{%
61           \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
62         }%
63         \let\thepage\relax
64         \def\protect{\noexpand\noexpand\noexpand}%
65         \edef\@tempa{%
66           \write\@auxout{%
67             \string\newlabel{#1}{%
68               {\thesubequation}%
69               {\thepage}%
70               {\@currentlabelname}%
71               {\@currentHref}{}%
72             }%
73           }%
74         }%
75         \expandafter

```

```

76     }%
77     \@tempa
78     \if@nobreak\ifvmode\nobreak\fi\fi
79     \fi
80     \@esphack
81 }%
82 }

```

Overload an AMS L^AT_EX command, which uses `\newlabel`. Sigh!

```

83 \def\@writetocindent@{%
84   \begingroup
85   \@for\@tempa:=-1,0,1,2,3\do{%
86     \immediate\write\@auxout{%
87       \string\newlabel{tocindent\@tempa}{%
88         \csname r@tocindent\@tempa\endcsname}{-}{-}{-}%
89     }%
90   }%
91 }%
92 \endgroup
93 }

```

3.2 Changes of section macros

Add to the underlying section heading macros so that they note the section name for use by label.

If a section heading or the like has a `\label` in it, we need to extract it, or subsequent processing breaks.

```

94 \def\NR@getttitle#1{%
95   \def\@currentlabelname{#1}%
96   \begingroup
97     \let\label\@gobble
98     \let\index\@gobble
99     \let\glossary\@gobble
100    \let\markboth\@gobbletwo
101    \let\@mkboth\@gobbletwo
102    \let\markright\@gobble
103    \let\protect\@unexpandable@protect
104    \edef\x{\endgroup
105      \noexpand\def\noexpand\@currentlabelname{%
106        \@currentlabelname
107      }%
108    }%
109    \x
110 }

```

First the numbered sections. While we are about it, put in a useful section formatting macro.

```

111 \let\NR@ssect\@ssect
112 \newcounter{section@level}
113 \def\@sect#1#2#3#4#5#6[#7]#8{%
114   \setcounter{section@level}{#2}%
115   \NR@getttitle{#7}%
116   \NR@ssect{#1}{#2}{#3}{#4}{#5}{#6}[#7]{\Sectionformat{#8}{#2}}%
117 }

```

and now the unnumbered ones

```

118 \let\NR@ssect\@ssect

```

```

119 \def\@ssect#1#2#3#4#5{%
120   \NR@getttitle{#5}%
121   \NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%
122 }

```

Parts and chapters are treated differently. sigh.

```

123 \let\NR@part\@part
124 \def\@part[#1]#2{%
125   \NR@getttitle{#1}%
126   \NR@part[{#1}]{#2}%
127 }
128 \let\NR@chapter\@chapter
129 \def\@chapter[#1]#2{%
130   \NR@getttitle{#1}%
131   \NR@chapter[{#1}]{#2}%
132 }
133 \let\NR@schapter\@schapter
134 \def\@schapter#1{%
135   \NR@getttitle{#1}%
136   \NR@schapter{#1}%
137 }

```

Captions

```

138 \let\NR@@caption\@caption
139 \long\def\@caption#1[#2]{%
140   \NR@getttitle{#2}%
141   \NR@@caption{#1}[{#2}]%
142 }
143 \AtBeginDocument{%
144   \@ifpackageloaded{longtable}{%
145     \let\NRorg@LT@c@ption\LT@c@ption
146     \def\LT@c@ption#1[#2]#3{%
147       \NRorg@LT@c@ption{#1}[{#2}]{#3}%
148       \def\@tempa{#2}%
149       \ifx\@tempa\@empty
150         \else
151           \NR@getttitle{#2}%
152         \fi
153     }%
154   }{}%
155 }

```

Compatibility for package titlesec.

```

156 \AtBeginDocument{%
157   \@ifpackageloaded{titlesec}{%
158     \let\NRorg@ttl@sect@i\ttl@sect@i
159     \def\ttl@sect@i#1#2[#3]#4{%
160       \NR@getttitle{#4}%
161       \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
162     }%
163   }{}%
164 }

```

3.2.1 Class beamer

```

165 \@ifclassloaded{beamer}{%
166   \def\NR@PatchBeamer#1{%
167     \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname

```

```

168             \csname beamer@#1\endcsname
169     \begingroup
170     \edef\x{\endgroup
171     \long\def\expandafter\noexpand\csname beamer@#1\endcsname
172     [####1]{% hash-ok
173     \noexpand\NR@gettitle{####1}%
174     \expandafter\noexpand\csname NRorg@beamer@#1\endcsname
175     [{####1]}%
176     }%
177     }%
178     \x
179     }%
180     \NR@PatchBeamer{section}%
181     \NR@PatchBeamer{subsection}%
182     \NR@PatchBeamer{subsubsection}%
183 }{}

```

3.3 Referencing stuff

We default the label and hypertext reference to be empty.

```

184 \def\@currentlabelname{}
185 \def\@currentHref{}

```

Since the second part of the preserved reference now has five parts (number, page, name, hypertext reference and file), we need extra utility macros:

```

186 \long\def\@firstoffive#1#2#3#4#5{#1}
187 \long\def\@secondoffive#1#2#3#4#5{#2}
188 \long\def\@thirdoffive#1#2#3#4#5{#3}
189 \long\def\@fourthoffive#1#2#3#4#5{#4}
190 \long\def\@fifthoffive#1#2#3#4#5{#5}

```

We have to redefine `\ref` and `\pageref` to know about extra reference elements. Make them robust, and compatible with Babel. The Babel switch is mimicked if not already defined. Some support for package `showkeys` is implemented. If option `notref` of that package is set, `\SK@ref` has the meaning of `\@empty`.

```

191 \providecommand*\@safe@activestruel{%
192 \providecommand*\@safe@activesfalse{%
193 \def\NR@setref#1{%
194   \begingroup
195     \@safe@activestruel
196     \expandafter
197   \endgroup
198   \expandafter\NR@@setref\csname r@#1\endcsname
199 }
200 \def\NR@@setref#1{%
201   \ifx\@undefined#1%
202     \let#1\relax
203   \fi
204   \@setref#1%
205 }
206 \def\T@ref#1{%
207   \NR@setref{#1}\@firstoffive{#1}%
208 }%
209 \def\T@pageref#1{%
210   \NR@setref{#1}\@secondoffive{#1}%
211 }%
212 \ifNR@showkeys
213   \ifx\SK@ref\@empty

```

```

214 \else
215   \def\T@ref#1{%
216     \@safe@activetrue
217     \SK@\SK@@ref{#1}%
218     \@safe@activesfalse
219     \NR@setref{#1}\@firstoffive{#1}%
220   }%
221   \def\T@pageref#1{%
222     \@safe@activetrue
223     \SK@\SK@@ref{#1}%
224     \@safe@activesfalse
225     \NR@setref{#1}\@secondoffive{#1}%
226   }%
227 \fi
228 \fi

```

Package `hyperref` uses its own definitions of `\ref` and `\pageref` because it extends the syntax by the star form. `\DeclareRobustCommand` is used by `hyperref`. Package `nameref` can be loaded before, after `hyperref` or after `hyperref`'s definitions in `\AtBeginDocument`.

```

229 \@ifpackageloaded{hyperref}{%
230 }{%
231   \DeclareRobustCommand{\ref}{\T@ref}%
232   \DeclareRobustCommand{\pageref}{\T@pageref}%
233 }

```

3.4 Usage and frontend

Access the (third) name part with `\nameref`;

```

234 \def\T@nameref#1{%
235   \begingroup
236     \let\label@gobble
237     \NR@setref{#1}\@thirdoffive{#1}%
238   \endgroup
239 }%
240 \ifNR@showkeys
241   \ifx\SK@ref\@empty
242   \else
243     \def\T@nameref#1{%
244       \@safe@activetrue
245       \SK@\SK@@ref{#1}%
246       \@safe@activesfalse
247       \begingroup
248         \let\label@gobble
249         \NR@setref{#1}\@thirdoffive{#1}%
250       \endgroup
251     }%
252   \fi
253 \fi
254 \def\nameref{\protect\T@nameref}

```

An extended form which gives title and page number.

```

255 \def\Nameref#1{'\nameref{#1}' on page~\pageref{#1}}

```

The default for `\Sectionformat`

```

256 \providecommand\Sectionformat[2]{#1}

```

3.5 Package ifthen support

Package ifthen's `\isodd` does not work with `\pageref` because of the extra link and the star form. Therefore we need an expandable variant.

Unfortunately there is no hook in `\ifthenelse` in order to provide expandable versions without link of `\ref` and `\pageref`. As possible target I could only find `\begingroup`:

```
257 \@ifpackageloaded{ifthen}{%
258   \let\NR@Org@ifthenelse\ifthenelse
259   \def\ifthenelse{%
260     \let\begingroup\NR@TE@begingroup
261     \NR@Org@ifthenelse
262   }%
263   \let\NR@Org@begingroup\begingroup
264   \def\NR@TE@begingroup{%
265     \let\begingroup\NR@Org@begingroup
266     \begingroup
267     \def\ref##1{\getrefbykeydefault{##1}{-}{??}}%
268     \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
269   }%
270 }{}
```

3.6 Compatibility with varioref

[This section was derived by Corey Minyard minyard@acm.org from the varioref package]

```
271 \AtBeginDocument{%
272   \ifx\csname @vppageref\endcsname\relax
273   \else
274     \def\@vppageref#1[#2]#3{%
275       \begingroup
276       \csname @safe@activestrue\endcsname
277       \edef\x{#3}%
278       \@onelevel@sanitize\x
279       \toks@{%
280         \NR@vppageref{#1}[[#2]]%
281       }%
282       \edef\x{\endgroup
283         \the\toks@{\x}%
284       }%
285       \x
286     }%
287     \def\NR@vppageref#1[#2]#3{%
288       \leavevmode\unskip
289       \global\advance\c@vrcnt\@ne
290       \@ifundefined{r@the\c@vrcnt @vr}{%
291         {\@namedef{r@the\c@vrcnt @vr}{??}{?}{-}{-}}{}%
292       }%
293       \edef\@tempa{%
294         \expandafter\expandafter\expandafter
295         \@secondoffive\csname r@the\c@vrcnt @vr\endcsname
296       }%
297       \@ifundefined{r@the\c@vrcnt @xvr}{%
298         {\@namedef{r@the\c@vrcnt @xvr}{??}{?}{-}{-}}{}%
299       }%
300       \edef\@tempb{%
301         \expandafter\expandafter\expandafter
302         \@secondoffive\csname r@the\c@vrcnt @xvr\endcsname
303       }%
304     }
```

```

302   {%
303     \let\@currentlabel\@empty
304     \expandafter\label\expandafter{\the\c@vrcnt @xvr}%
305   }%
306   \ifx\@tempa\@tempb
307   \else
308     \vref@err{%
309       \noexpand\vref at page boundary %
310       \@tempb-\@tempa\space (may loop)%
311     }%
312   \fi
313   \@ifundefined{r@#3}{\@namedef{r@#3}{??}{??}{-}{-}}{}%
314   \edef\thevpagerefnum{%
315     \expandafter\expandafter\expandafter
316     \@secondoffive\c@name r@#3\endcsname
317   }%
318   \ifx\vref@space\@undefined
319     \space
320   \else
321     \vref@space
322   \fi
323   \ifx\@tempa\thevpagerefnum
324     #1%
325   \else
326     #2%
327     \is@pos@number\thevpagerefnum{%
328       \is@pos@number\@tempa{%
329         \@tempcnta\@tempa
330         \advance\@tempcnta\@ne
331       }{%
332         \@tempcnta\maxdimen
333       }%
334       \ifnum \thevpagerefnum =\@tempcnta
335         \ifodd\@tempcnta
336           \if@twoside
337             \ref@text@face@after
338           \else
339             \ref@text@after
340           \fi
341         \else
342           \ref@text@after
343         \fi
344       \else
345         \advance\@tempcnta-2 %
346         \ifnum \thevpagerefnum =\@tempcnta
347           \ifodd\@tempcnta
348             \ref@text@before
349           \else
350             \if@twoside
351               \ref@text@face@before
352             \else
353               \ref@text@before
354             \fi
355           \fi
356         \else
357           \ref@text@faraway{#3}%
358         \fi

```

```

359         \fi
360     }{%
361         \reftextfaraway{#3}%
362     }%
363     \fi
364     {%
365         \let\@currentlabel\@empty
366         \expandafter\label\expandafter{\the\c@vrcnt @vr}%
367     }%
368 }%
369 \DeclareRobustCommand\vnameref[1]{%
370     \unskip~\nameref{#1}%
371     \@vpageref[\unskip]{#1}%
372 }%
373 \fi
374 }
375 \@ifundefined{@Refstar}{%
376     \def\T@Ref#1{%
377         \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
378     }%
379     \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
380         \MakeUppercase#1%
381     }%
382 }{%
383 \AtBeginDocument{%
384     \@ifpackageloaded{varioref}{%
385         \@ifundefined{@Refstar}{%
386             \DeclareRobustCommand*\Ref}[1]{%
387                 \T@Ref{#1}%
388             }%
389         }{%
390     }{}%
391 }%

```

3.7 Support for listings

```

392 \AtBeginDocument{%
393     \@ifpackageloaded{listings}{%
394         \let\NR@Org@lst@MakeCaption\lst@MakeCaption
395         \def\lst@MakeCaption{%
396             \ifx\lst@label\@empty
397             \else
398                 \let\@currentlabelname\lst@@caption
399             \fi
400             \NR@Org@lst@MakeCaption
401         }%
402     }{}%
403 }
404 </package>

```

4 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in **roman** refer to the code lines where the entry is used.

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